REMARKS

Claims 3, 9-24, 27, and 33-58 are pending in the application, of which Claims 15, 39, 49, and 54 are independent claims. Claims 3, 9-11, 15-21, 27, 33-35, 39-45, and 49-58 stand rejected under 35 U.S.C. § 102(b) based on U.S. Patent No. 6,068,448 to Muratsubaki et al. and Claims 12-14, 22-24, 36-38, and 46-48 stand rejected under 35 U.S.C. § 103(a) based on Muratsubaki. In response, certain claims are amended to clarify the claimed invention, certain claims are cancelled, and new claims are added to the application.

Regarding Rejections Under Section 102

Claims 3, 9-11, 15-21, 27, 33-35, 39-45, and 49-58 stand rejected under 35 U.S.C. § 102(b) based on U.S. Patent No. 6,068,448 to Muratsubaki et al.

Before discussing the cited references, a brief summary of the claimed invention may be helpful. The Applicants disclose and claim a multi-stage compressor having a ball screw drive. As a multi-stage compressor, there are at least two piston chambers, each having a different volume. When fluid in a first piston chamber is compressed, it flows to a second piston chamber having a smaller volume, where it is further compressed. The two pistons are directly connected by a threaded connecting member and a ball-screw drive is engaged with the threaded member. A reversible motor under control of a controller rotates the ball screw nut to cause reciprocating linear translation of the connecting member and pistons.

In a particular embodiment, as shown in FIG. 1, the compressor is disposed between an oxygen concentrator and a portable oxygen storage tank. The use of an oxygen concentrator as an input source means that it may take time to fill the first piston chamber with oxygen. To solve that problem, the controller does not begin a piston cycle until gas with the first chamber reaches a predetermined pressure, as reported by a first pressure sensor. In addition, the rotational speed of the motor can vary during a piston cycle, such as by ramping up at the beginning of a stroke and then ramping down at the end of the stroke.

Muratsubaki discusses a pressure hydraulic pump that includes two-stages of plunger pumps driven by a ball-screw drive system. In operation, fluid is sucked into the first stage pump from a fluid reservoir. The first stage pump boosts the fluid pressure to an intermediate

pressure. That fluid is sucked into the second stage pump, where its pressure is further boosted before being expelled to a load vessel or hose nozzle.

In comparison, the Applicants' independent claims now recite "**a controller in communication with the drive system to initiate a piston cycle by initiating a compression stroke in the first piston in response to the detection of a predetermined pressure within the first piston chamber**" (Claims 15 and 49; see also Claims 39 and 54). That is, the Applicants' compressor can reciprocate intermittently as it waits for an adequate quantity of fluid to fill the first stage piston chamber, as may be required when used with an oxygen concentrator. Indeed, that is the purpose of the previously claimed first pressure sensor (Claims 10, 20, 34, and 44). Support for the amendment can be found at least at page 4, line 28, through page 5, line 2, and page 5, line 28, through page 6, line 1, of the Specification as originally filed.

Muratsubaki is not concerned with filling the first-stage piston chamber because it sucks liquid from a reservoir. As noted by Muratsubaki, the pistons reciprocate periodically at a predetermined period. (*See, e.g.*, col. 9, ll. 61- 65; col. 10, ll. 26-29; col. 11, ll. 34-37). Thus, Muratubaki does not anticipate intermittent reciprocation. Furthermore, contrary to the assertion in the Office Action, Muratsubaki does not include a pressure sensor at the first-stage piston chamber. Instead, Muratsubaki utilizes a pressure gauge (62) to measure the intermediate pressure of the liquid as it passes from the first stage to the second stage as controlled by a relief valve (52). (Col. 11, ll. 23-27).

Muratsubaki does not disclose or suggest operating a piston cycle in response to the pressure within the first-stage piston chamber. As such, the amended claims distinguish over Muratsubaki and are believed to be in condition for allowance.

The dependent claims recite additional patentable subject matter. The allowability of the dependent claims follows from the allowability of the independent claims from which they depend. Because each independent claim should now be allowable, the dependent claims should also be allowable.

Reconsideration of the rejections under 35 U.S.C. § 102(b) is respectfully requested.

Regarding Rejections Under Section 103

Claims 12-14, 22-24, 36-38, and 46-48 stand rejected under 35 U.S.C. § 103(a) based on Muratsubaki. Each of those claims is a dependent claim.

As discussed above, Muratsubaki neither discloses nor suggests the invention as now claimed in the independent claims. The allowability of the dependent claims follows from the allowability of the independent claims from which they depend. Because each independent claim should now be allowable, the dependent claims should also be allowable.

Reconsideration of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

Regarding New Claims

New Claims 59-68 are added by way of this amendment. No new matter is being introduced. Support for Claims 59-62, 64-65, and 67-68 can be found at least at page 7, lines 3-5, of the Specification as originally filed. Support for Claim 63 and 66 can be found at least at page 4, lines 10-24, of the Specification as originally filed.

Entry and favorable consideration of the new claims are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

R.D. Johnson & Associates, P.C.

By /Rodney D. Johnson/

Rodney D. Johnson
Registration No. 36,558
Telephone: (781) 444-6844
Facsimile: (617) 412-3081

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